

LOWELL RESTORATIVE JUSTICE Building Community Coalitions

UEP 232: GIS for Urban
and Environmental Analysis

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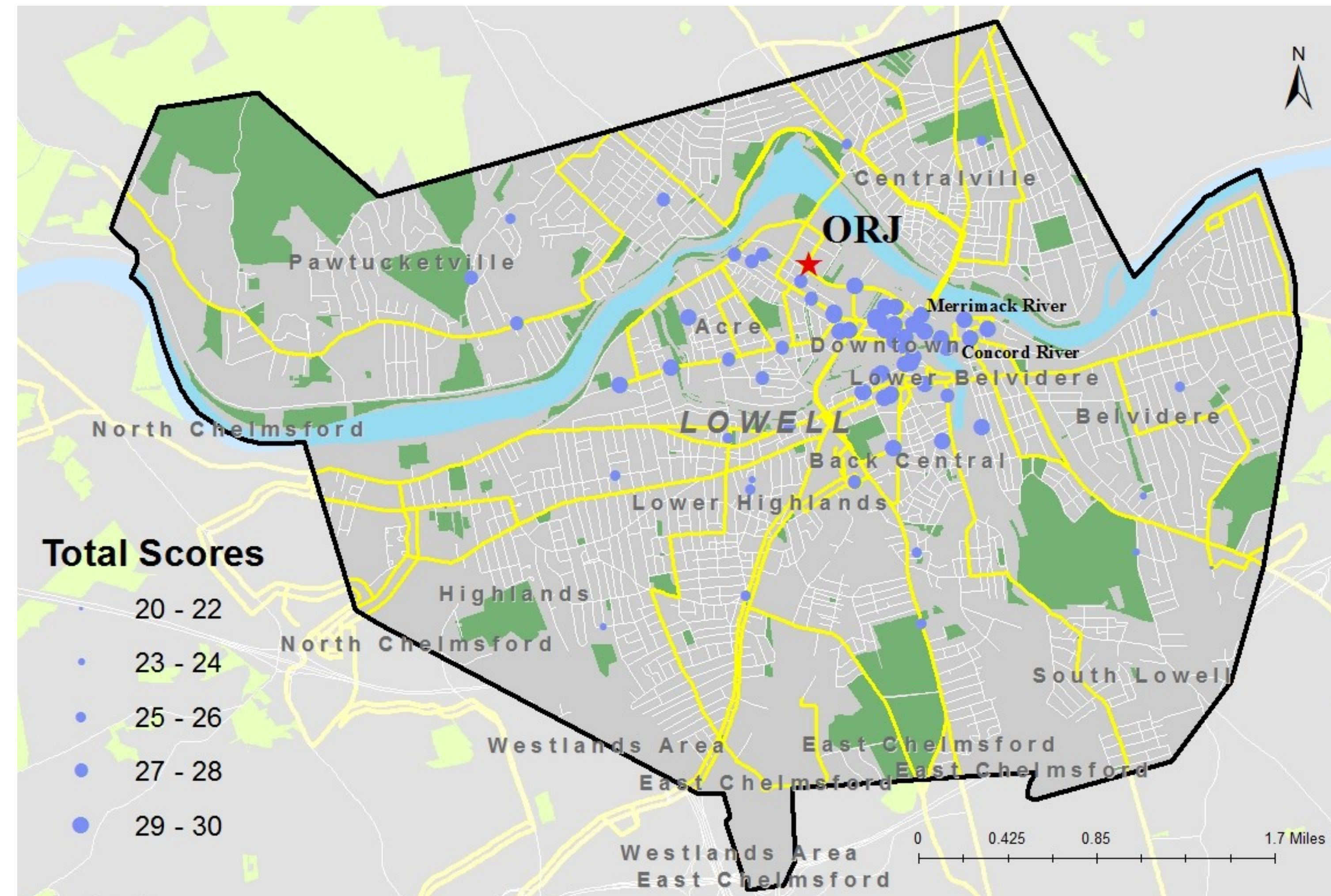
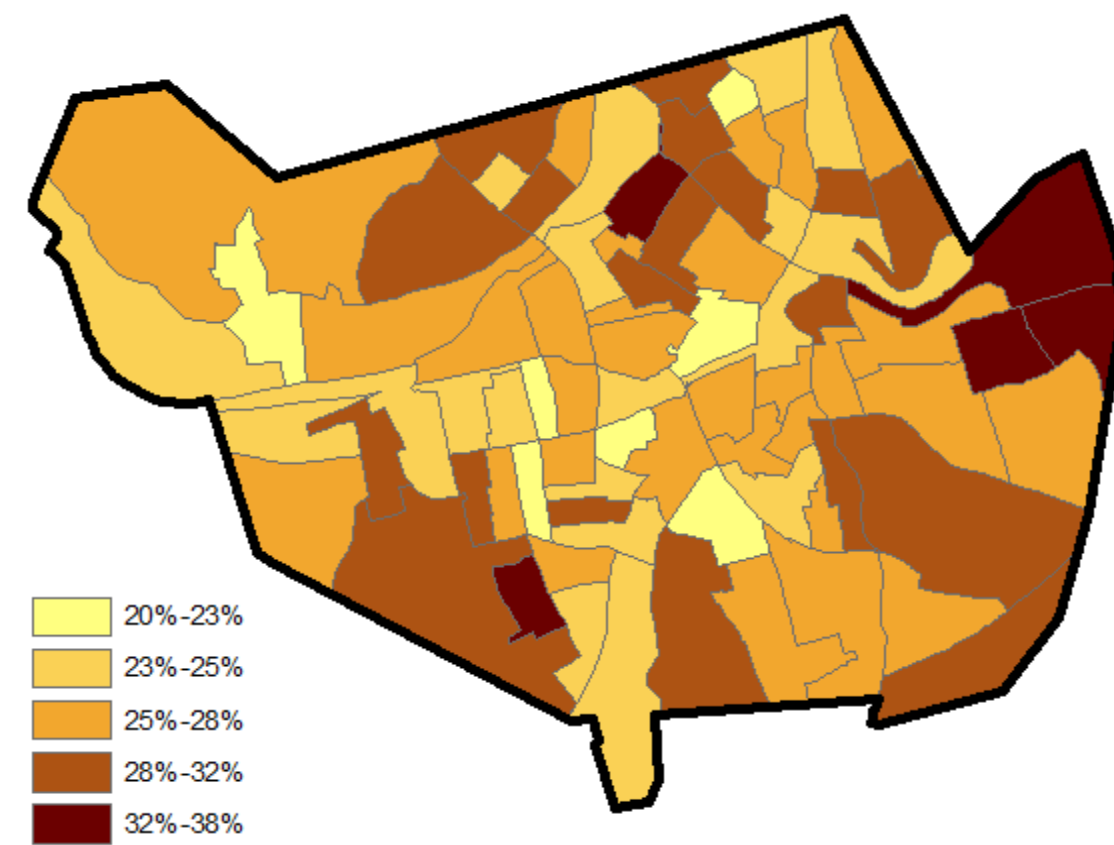
INTRODUCTION

Our Restorative Justice (ORJ) is a nonprofit organization founded in 2012 in Lowell, Massachusetts. Their mission is to offer an alternative to the growing number of young people who have become involved in the Middlesex County Juvenile Court after committing minor offenses, often in school. ORJ is the product of innovation and collaboration by local juvenile justices and legal experts, and today it functions as a diversion program for youth, helping them to avoid entry into the “school-to-prison pipeline.”

Based on their experience working with these individual youth, ORJ believes that restorative justice is most effective when it can reach youth in the schools, organizations, and communities. Therefore, ORJ is seeking to collaborate with different organizations doing related work in Lowell, that will embed their restorative justice work in the existing network of community organizations and resources.

The Mission of this project is to help them to evaluate those potential organizations in different fields in Lowell and to help ORJ to establish collaborations with organizations.

% of the total households with children of 12-17 years old



RESULTS

There are 89 organizations in 6 different categories: education, housing and homeless care, youth service organizations, physical and mental health, food supply and community organizations.

Total Scores	Number of organizations
30	38
29	16
28	14
27	3
26	6
25	6
24	4
23	1
20	1

As the table showed, most of those organizations have relative high scores, the highest score is 30 and the lowest score is 20, which means that all those organizations have relative good locations. It is obvious on the map as well. Most of them are in downtown area of Lowell and they are very close to ORJ, which brings convenience for ORJ to collaborate with them. Besides, most of them can easily access to LRTA bus (yellow lines on the map), which makes those organizations more accessible.

These results provide a reference to ORJ to consider the collaboration with those organizations. Among those organizations who have a total score of 30, UTEC is a wonderful organization, which offers great helps to youth facing difficult life circumstances. And MA Department of Children and Families provides service for youth and their families as well. So I recommend that those organizations with total scores of 30 are most appropriate partners to ORJ. And those with relative high scores (28 and 29) are also potential partners for ORJ to consider.

SOURCES

- Reference:
- Jonathan Cinnamon, Nadine Schuurman and Valorie A Crooks, (2008). A method to determine spatial access to specialized palliative care services using GIS. *BMC Health Services Research* 2008, 8:140.
 - Gary Higgs, (2004). A Literature Review of the Use of GIS-Based Measures of Access to Health Care Services. *Health Services and Outcomes Research Methodology* 5, no. 2 (2004): 119-139.
 - Timothy L. Hawthorne and Mel-Po Kwant, (2012). Using GIS and perceived distance to understand the unequal geographies of health care in lower-income urban neighborhoods. *The Geographical Journal* Vol. 178 No. 1, pp. 18-30, 2012.
 - Luis Rosero-Bixby, (2004). Spatial access to health care in Costa Rica and its equity: a GIS-based study. *Social Science & Medicine* 58 (2004) 1271-1284.

Data sets: Census 2010, MassGIS, MassDOT, Organizations list provided by ORJ, Organizations addresses from their websites.

METHODOLOGY

In order to evaluate those organizations, total social services accessibility is the final goal. Thus, several factors should be considered. Those factors are significant because they are relevant to youth development, which is the main value of ORJ.

Factor	Distance Criterial/meters	Number of Factor in Lowell
LRTA Bus Routes	300	19
Libraries	500	32
Schools	500	39
Colleges and Universities	800	4
Community Health Centers	900	6
Hospitals	1000	2

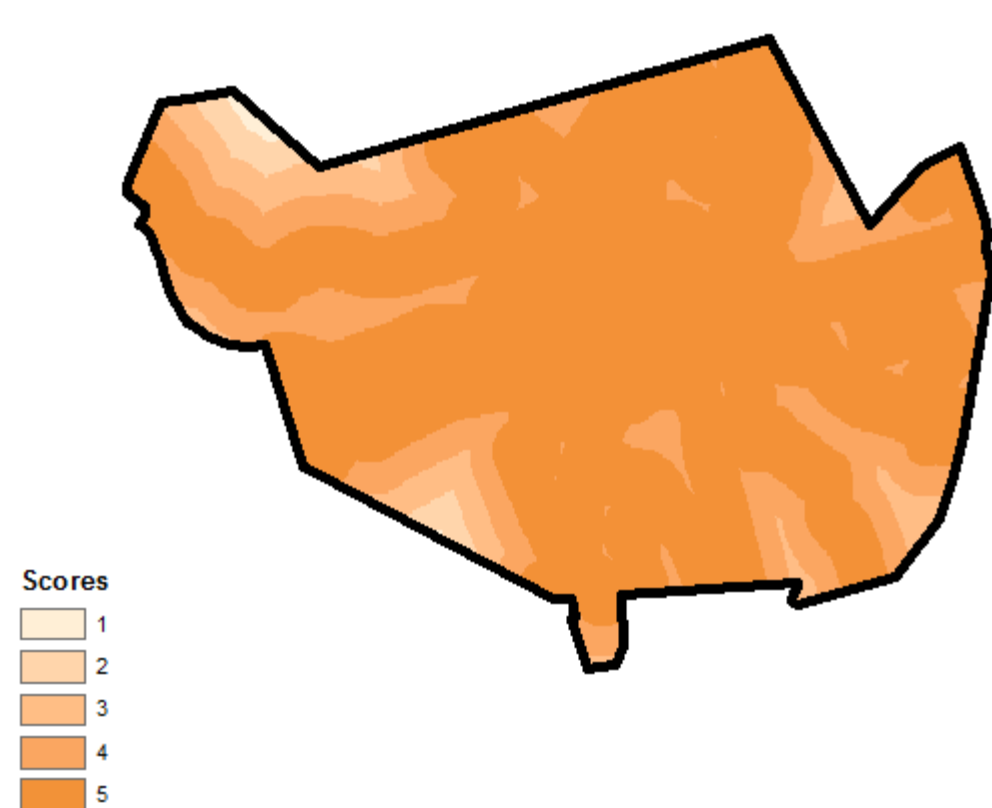
In this project, the criterial for grading is the distance from those public services providers. And the distance classes of those factors are different and they are based on the numbers of each factor in Lowell area. Because this project only aimed to evaluate organizations in Lowell, the distance criterial is relative small (300 meters to 1000 meters). In this case, the Euclidean Distance is a useful tool to be used to derive individual accessibility maps for each of those different services. These maps were ranked by 5 successive gradients, each within specified distances of the service location or provider. These areas were then assigned a score based on their distance to those service providers. Those closest to the service provider or location were given scores of 5, while areas farthest away were assigned scores of 1. Maps of 6 different factors were then overlaid on each other to create an overall accessibility map of Lowell. All those individual scores were added up to get an aggregate service accessibility score. Areas with different accessibility (30 was the maximum score, 6 was the minimum score.) are marked by different colors.

Then Geocoding method was used to make those organizations visualized on the map. Each organization’s websites provided detailed address information. And the address locator for Geocoding is the US Census TIGER street data set.

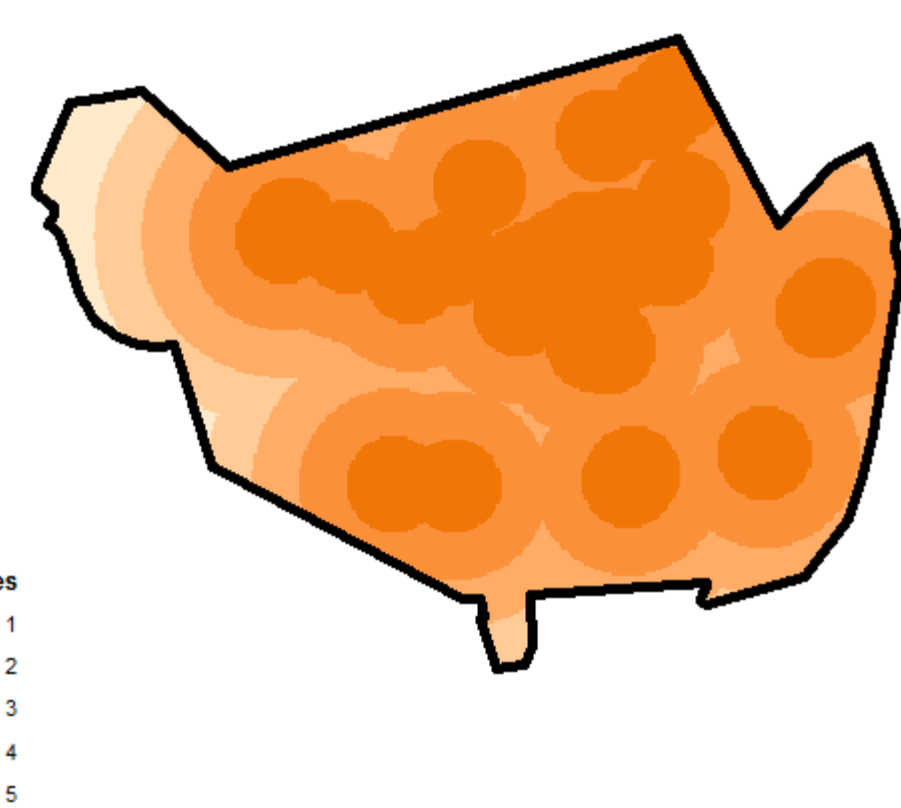
Finally, those scores of different areas were extracted to points data set (those organizations), which put the final raster accessibility scores on each point of organization’s attribute table. Thus each organization had a total social services accessibility score based on their locations. And those organizations were marked by blue circles of different sizes based on their total accessibility scores (Higher score with larger circle).

SOCIAL SERVICES ACCESSIBILITY SCORES

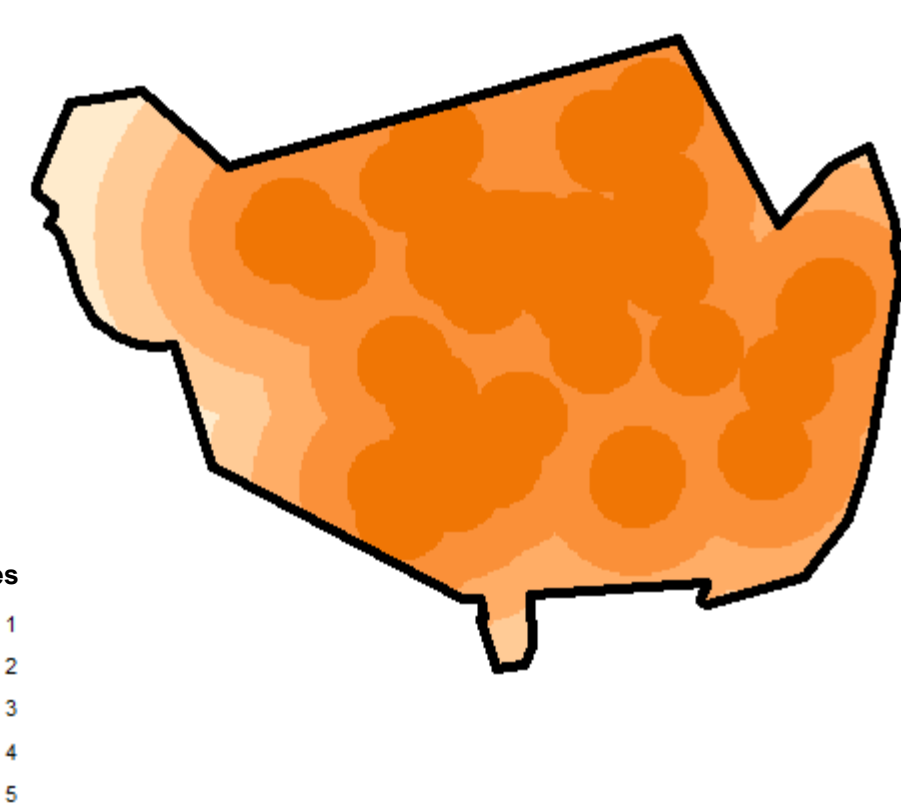
LRTA Bus Routes



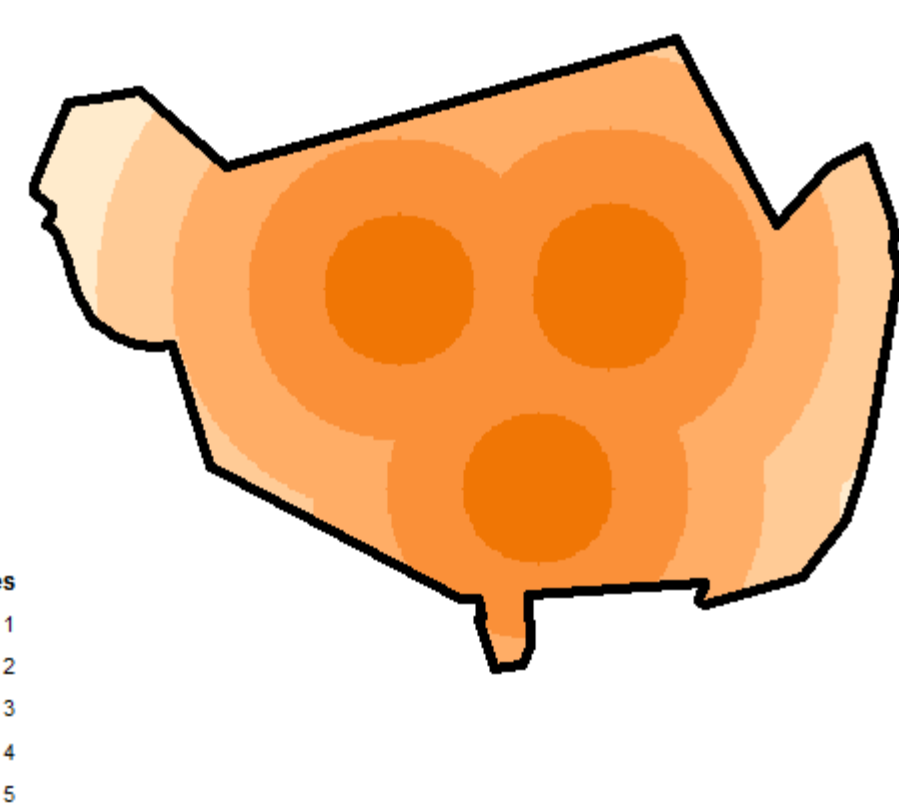
Libraries



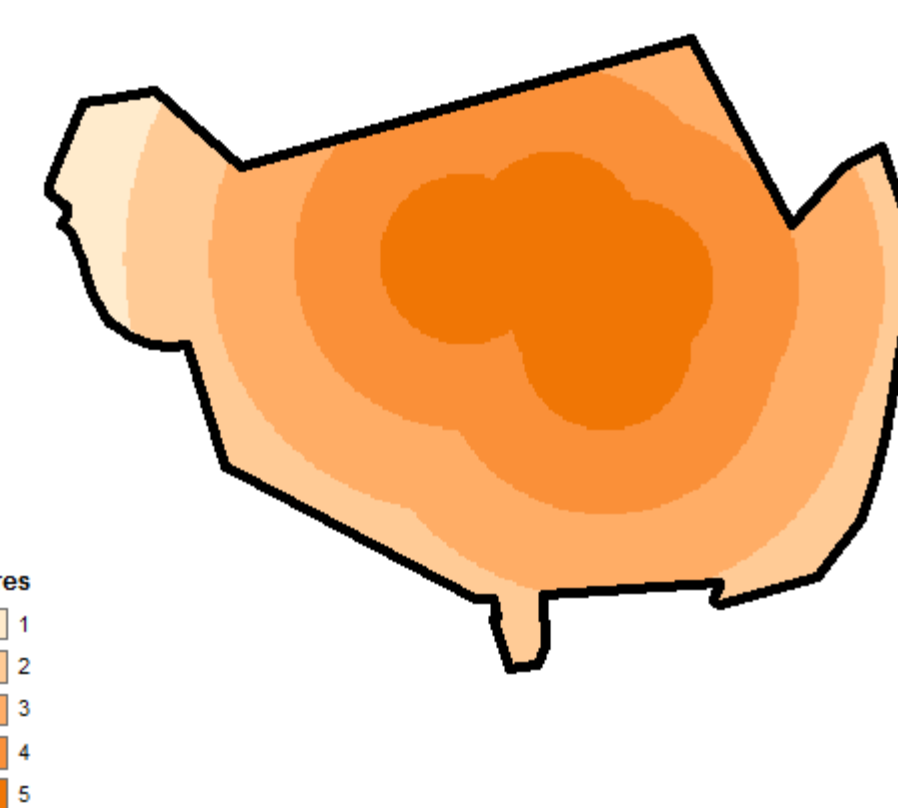
Schools



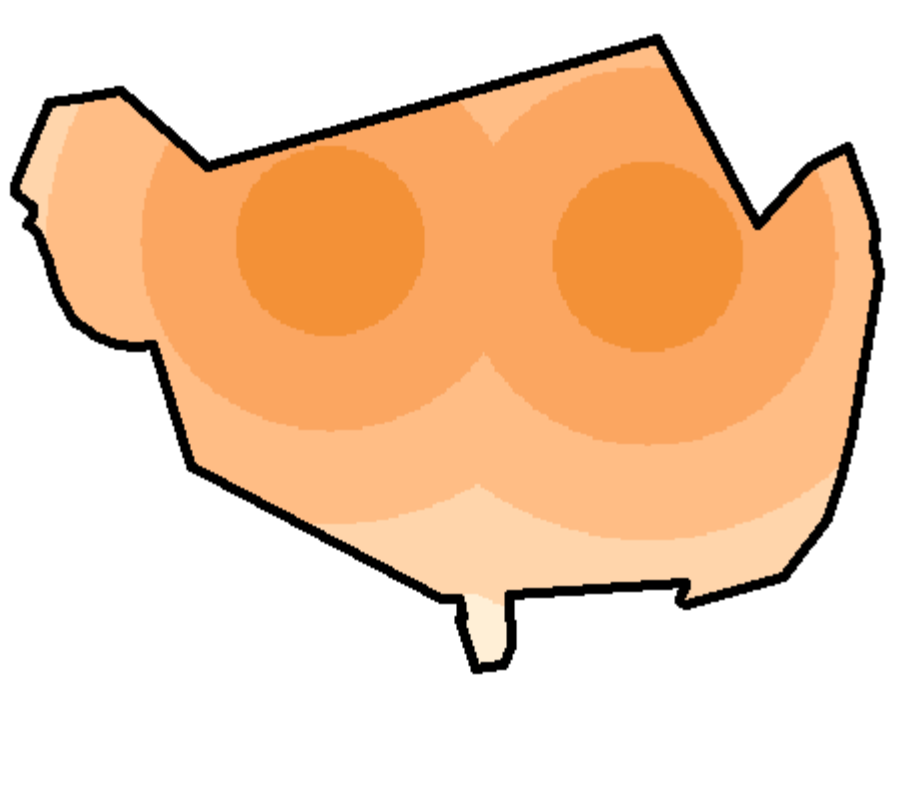
Colleges and Universities



Community Health Centers



Hospitals



Total Scores

